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10/821,368	04/09/2004	Yukio Miyaki	09792909-5862	1192

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EXAMINER	
WANG, EUGENIA	

ART UNIT	PAPER NUMBER
1795	

MAIL DATE	DELIVERY MODE
06/15/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/821,368	MIYAKI ET AL.	
	Examiner	Art Unit	
	EUGENIA WANG	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 April 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on April 6, 2009 has been entered.

Response to Amendment

2. In response tot eh amendment received April 6, 2009:

a. Claims 1-4 are pending.

b. The previous 112 rejections have been withdrawn in light of the amendment

c. The core of the previous rejection is maintained. However, a new interpretation on the previously applied art and a new prior art is added. Such changes are necessitated by the amendment.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 0704921A1 (Fujimoto et al.) in view of WO 02/21616 (Fukui et al.), WO 01/29918 (Ikeda et al.), and US 6270923 (Bito et al.). (Note: US 2004/0043294 is being relied upon as

an English translation of WO 02/21616, both of which stem from PCT/JP01/07519. Also US 7241533 is being relied upon as an English translation for WO 01/29918, both of which stem from PCT/JP00/07297).

As to claim 1, Fujimoto et al. teaches a cylindrically wound battery, where the electrode material mixture (both positive electrode, cathode, and negative electrode, anode are included) is present on both the inner and outer sides of the current collector (abs). Furthermore, the negative electrode active material is chosen such that the efficiency of lithium intercalation and deintercalation is high (p3, lines 37-39). The compounds used in the negative electrode materials are from groups IIIb, IVb, and Vb of the periodic table (all of which fit the description of metals or metalloids capable of alloying with lithium and compounds therefore) (p3, lines 32-36). Staring at p3, line 40, many examples of active materials are listed.

As previously stated, the battery of Fujimoto et al. is cylindrical (p2, lines 48-49). NOTE: A cylinder inherently has a circular cross section (sectional surface shape), as is defined by the constraints of a cylindrical volume. A circle is a special type of ellipse; in an ellipse that is a circle, the longest diameter to the shortest diameter is 1:1 (or 1, inclusive, as claimed by the instant application). Furthermore, it is listed that the thickness of electrode material mixture on the inner side of the collector is from 60% to 97%, more preferably 70% to 95%, of the outer collector. The difference in thickness inherently provides a difference in capacity, as the thicker layer contains more active material, and thus has more capacity. In Fujimoto's teaching, the ratio ranges of capacity of the outer active material to the inner active material would be from 1:0.6 to

1:0.97, inclusive, more preferably 1:0.7 to 1:0.95, inclusive. A portion of Fujimoto et al.'s range covers the claimed ratio, and therefore would inherently provide the same claimed ratio difference.

Alternately, it can be said that Fujimoto et a. does not disclose the specific capacity ratio of the outer anode active material to the inner active anode material that is from 1:0.6 to 1:0.8, inclusive. However, it has been held that when the difference between a claimed invention and the prior art is the range or value of a particular variable, then a prima facie rejection is properly established when the difference in the range or value is minor. Titanium Metals Corp. of Am. v. Banner, 778 F.2d 775, 783, 227 USPQ 773, 779 (Fed. Cir. 1985). Generally, differences in ranges will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such ranges is critical. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). In re Hoeschele, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969). Claims that differ from the prior art only by slightly different (non-overlapping) ranges are prima facie obvious without a showing that the claimed range achieves unexpected results relative to the prior art. (In re Woodruff, 16 USPQ2d 1935,1937 (Fed. Cir. 1990)). Selection of optimum ranges within the prior art's general condition is obvious. (In re Aller, 105 USPQ 233(CCPA 1955)).

It is noted that Fujimoto et al. teaches of average particle sizes of its negative active material. For example, a tin-silicon-oxide (negative active material) of synthesis example 1 has an average particle size of 4.5 μm (which falls into the primary particle

diameter size as claimed, 0.1-35 μm) (p7, lines 3-6). It is noted that such particles are interpreted to be primary particles, as they are the only particles of active material stated, barring specification as to what constitutes a primary particle. Office personnel are to give claims their broadest reasonable interpretation in light of the supporting disclosure. *In re Morris*, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997). Also, limitations appearing in the specification but not recited in the claim are not read into the claim. See *In re Zletz*, 893F.2d 319, 321-22,13 USPQ2d, 1320, 1322 (Fed. Cir. 1989). Although it is not specifically stated that all of the particles fall within the claimed size, Fujimoto et al.'s teaching of embodied average particle sizes would at least render obvious the use of particles of such a size, as such a size is specifically noted. Accordingly, one of ordinary skill in the art would find it obvious to make the negative active material having a size of 4.5 μm, as Fujimoto et al. specifically embodies such a desired size, wherein the use of active material of this size would have provided the predictable result of creating a working battery. Therefore it would have been obvious to one having ordinary skill in the art at the time the claimed invention was made to make a battery with an active material having a size of 4.5 μm (and sizes close to that), as Fujimoto et al. specifically embodies negative active material with particles having such an average size, and thus the use of active material particles of such a size within a battery would yield the predictable result of forming an operating battery. Furthermore, it is noted that particle sizes of active materials are seen as result effective variables, as particle sizes would affect physical characteristics that would help optimize battery operation. For example, particle sizes would alter things such as surface area of

the active material available for chemical reaction, packing density (amount of active material within the anode available for chemical reaction as well as porosity, which would allow for ion transport). It would have been obvious to one having ordinary skill in the art at the time the invention was made to optimize the size of the (primary) particle size (i.e. to between 0.1-35 μm), since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). It has been held that discovering that general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*,105 USPQ 233. Generally, differences in ranges will not support the patentability of subject matter encompassed by the prior art *unless* there is evidence indicating such ranges is critical. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). *In re Hoeschele*, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969). NOTE: For an alternate interpretation, wherein a narrower interpretation is given to "primary particles," see "*" below.

Fujimoto et al. does not teach (a) that the anode active layers are alloyed through heat treatment with the anode current collector in at least a portion of the interface with the anode current collector, (b) that the anode current collector is made of a plurality of layers including an inner current collector layer and an outer current collector layer, wherein (c) the outer and inner current collector layers are made of materials that are easily alloyed with their respective outer and inner active material layers. *Alternately (d) it can be interpreted that Fujimoto et al. does nto specifically mention the presence

of primary particles of negative active material, wherein the primary particles have a diameter size of 0.1-35 μm.

With respect to (a), Fukui et al. teach of sintering (heating) the anode active material and conductive particles with the current collector in order to improve adhesion between the active material/conductive particles with the current collector, which suppresses the separation of the anode material from the current collector (para 0018). It is further noted that the current collector is made of a material, which when heat treated diffuses into the active material particles and thus acts to adhere the active material to the current collector (alloying at the interface) (para 0022). The motivation for wanting to heat treat and alloy the current collector with the anode active material layer is to improve adhesion between the two layers. Therefore it would have been obvious to one having ordinary skill in the art at the time the claimed invention was made to use a heat treatment step to the battery of Fukui et al. in order to alloy the anode active material to the current collector, which in turn provides better adhesion between the two layers and provides better charge-discharge characteristics. (It is noted that the process embodied in Fukui et al. would provide the alloying, as claimed, even though that particular language is note used. Para 0031 embodies heat treating temperatures, 200-500°C, and Table 4 shows more heat treating conditions, wherein the heat treatment times range from 10-30 hours. This is similar to the heat treatment embodied by Applicant, wherein one example embodies heating at 200°C for 24 hours (p 23, lines 15-18) and 400°C for 12 hours (p 28, lines 21-24). Furthermore, such a treatment taught by Fukui et al., as applied to Fujimoto et al, would yield the alloyed

structure not only because the heat treatments are similar, but also because the materials used are similar, too. Fukui et al. teaches of the use of similar materials for the active material as well as the current collector as that of the Instant Application and Fujimoto et al. (see p 9, first paragraph in the Specification and p8, line 18 and p 14, lines 47-50 in Fujimoto et al.). Fukui et al. teaches of a copper current collector and a silicon containing active material (see para 0022, lines 87-11; para 0024, lines1-3).).

With respect to (b), two portions of Ikeda et al. are relied upon to render obvious the use of two types of plural layered current collectors.

(b-1) Ikeda et al. teach of a rechargeable lithium battery where current collectors having layers of active material provided on opposite faces thereof may be prepared from two current collectors each having a layer of active material on its one face by joining the back faces to each other (thus resulting in a two layered current collector with active material on either side) (col. 6, lines 40-45). One having ordinary skill in the art at the time the claimed invention was made would have found it obvious to create a current collector with active material on both sides, as disclosed by Ikeda et al., since such a known method of forming a current collector with active material on opposing sides would yield the predicable result of having a similar structure (active material on both sides of a current collector, whether the current collector is one or two layers), which would have operated in the same manner. Accordingly, it is seen that whether a current collector is a single layer (as embodied in the primary reference, Fujimoto et al.) or plural layers (as taught by Ikeda et al.) lacks criticality, as both would yield the same result of having electrode active material coated on both sides of a current collector for

use in a battery. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the single layered current collector with active material on both sides with a current collector with plural layers wherein active material is on both sides, as Ikeda et al. teach that such a method is known to make a current collector with active material on both sides, and the application of such a method would yield the predicable result of having a similar structure (active material on both sides of a current collector, whether the current collector is one or two layers), which would have operated in the same manner within a battery.

(b-2) Ikeda et al. teach of current collector made of a metal foil, wherein an interlayer may be provided on each face of the current collector, wherein the interlayer is what faces the active material (col. 2; lines 58-64). In such a manner, it can be interpreted that the composite collector of Ikeda et al. includes the current collector and inter layer on each side (wherein such a final product has a battery wherein the anode active material is on both sides of the composite anode current collector having the plurality of layers defined above). The motivation for using a plural layered composite collector (interlayer-current collector-interlayer) is in order to provide the current collector in the form of a foil that is high in mechanical strength while providing interlayers that are made of materials that can be alloyed with the active material to enable diffusion of the interlayer components into the active materials (col. 2, line 58 to col. 3, line 7). The motivation for wanting use a plural layered composite current collector (as taught by Ikeda et al. and applied to Fujimoto et al.) is to provide a stronger composite current collector that still is capable of alloying with the active materials (col. 2, line 58 to col. 3,

line 7). (It is noted that Fukui et al. has already been applied in combination and renders obvious alloying between a current collector and active material, as set forth in part (a).) Therefore it would have been obvious to one having ordinary skill in the art at the time the claimed invention was made to use the plural layered composite current collector (interlayer-current collector-interlayer), as taught by Ikeda et al. in the battery of Fujimoto et al. in order to impart good mechanical strength of the composite collector and good alloying capabilities between the composite collector and the active materials.

With respect to (c), it is submitted that the combination of Fujimoto et al., Fukui et al., and Ikeda et al. would yield a plural-layered anode current collector that is wherein the outer layer and inner layer is easily alloyed with its respective outer and inner active material layer. Such reasoning is set forth below:

It is first noted that Fujimoto et al. as combined with Fukui et al. renders obvious the alloying, while the addition of Ikeda et al. yields obvious the plural layered current collector with its respective inner and outer layer facing its respective (inner and outer) layer of active material (as set forth above).

Additionally, Fujimoto exemplifies active materials used as well as current collecting materials used. For example, example 3 is relied upon to exemplify the use of a negative active material (both outer and inner) containing both Sn and Si (compound 4-D) in conjunction with a copper current collector (p8, line 18; p14, lines 47-50).

It is noted that Fukui et al. teach of similar materials: copper current collector and a silicon containing active material (see para 0022, lines 87-11; para 0024, lines1-3).

Furthermore, Ikeda et al. also embody a copper current collector that faces similarly embodied active material with respect to both interpretations taken (b-1 and b-2, respectively). For example, see Ikeda et al. col. 6, lines 40-45 and 55-58 with respect to the copper being used as the current collector, as applied to the b-1 interpretation (plural layered current collector via joining two current collectors); see col. 2, line 58 to col. 3, line 7 with respect to copper being used as the interlayers (outer layers of the current collector), as applied to the b-2 interpretation, wherein it is specifically stated that the interlayer alloys for alloying. See col. 2, lines -13 for preferred active materials, both tin and silicon embodied.

The ease at which materials are alloyable are inherent to the materials. Accordingly, it would be inherent that such a current collector material (copper) is a material that can be easily alloyed with both the outer and inner active material layers (made of a Si compound), as is a characteristic with materials themselves.

Where applicant claims a composition in terms of a function, property or characteristic and the composition of the prior art is the same as that of the claim but the function is not explicitly disclosed by the reference, the examiner may make a rejection under both 35 U.S.C. 102 and 103, expressed as a 102/103 rejection.

The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. In re Rijckaert, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993).

"In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." Ex parte Levy, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990)

In the case of the instant application the basis for expectation of inherency is that the materials for the current collector and anode active material embodied by Fujimoto et al., Fukui et al., and Ikeda et al. (copper and a Si compound, respectively, as set forth above) are similar to that embodied by the instant application (which embodies an active material with silicon or tin and a current collector of copper, titanium, aluminum, and nickel). See p 9, first paragraph of the Specification. Accordingly, the exemplified prior art materials would inherently have the characteristic of a current collector that can easily alloyed with that of the active material. Furthermore, it is specifically noted that Ikeda et al. reinforces such a position, as it embodies copper as the interlayers, wherein it is said that the interlayers alloy with active materials (silicon and tin embodied) (col. 2, lines 1-13, 58-67; col. 3, lines 1-7).

The Examiner invites applicant to provide that the prior art products do not necessarily or inherently possess the characteristics of his [or her] claimed product.

Whether the rejection is based on inherency' under 35 U.S.C. 102, on prima facie obviousness' under 35 U.S.C. 103, jointly or alternatively, the burden of proof is the same...[footnote omitted]." The burden of proof is similar to that required with respect to product-by-process claims. In re Fitzgerald, 619 F.2d 67, 70, 205 USPQ 594, 596

(CCPA 1980) (quoting In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433-34 (CCPA 1977)).

There is no requirement that a person of ordinary skill in the art would have recognized the inherent disclosure at the time of invention, but only that the subject matter is in fact inherent in the prior art reference. Schering Corp. v. Geneva Pharm. Inc., 339 F.3d 1373, 1377, 67.

Accordingly, the materials (current collector as well as inner and outer active materials) as exemplified by Fujimoto et al. are easily alloyable, and thus when the heat treatment of Fukui et al. is applied (as set forth in part (a) above), the result is a current collector that is easily alloyed with the outer and inner active material layers.

*With respect to (d) (wherein the alternate interpretation on primary particles is applied), Bito et al. is relied upon. Bito et al. teach of similar type of battery - a lithium secondary battery, wherein Sn and Si are embodied as the negative electrode material (col. 1, lines 5-10; col. 2, lines 50-60). Specifically, the size of the primary particles of the negative active material are set forth as being between 0.01-1 μm (col. 14, lines 45-50). (It is specifically noted that Bito et al. particularly embodies the size of 1 μm (as it is an endpoint), which falls within the claimed range, wherein a portion of Bito et al. overlaps the claimed range.) The motivation for wanting to use an electrode active material that has a size of 1 μm is that it has good characteristics, such as good reversible charge/discharge, large discharge capacity, and high discharge capacity retention ratio against cycles of the resultant batteries (col. 14, lines 45-54). Furthermore, it is noted that sizes of active material primary particles are seen as result

effective variables, as particle sizes would affect physical characteristics that would help optimize battery operation. For example, particle sizes which are too small would make it difficult to ensure current collection, while particles that are too large make it difficult to cope with changes in volume due to charge/discharge cycle (col. 14, lines 55-67). It would have been obvious to one having ordinary skill in the art at the time the invention was made to optimize the size of the active material primary particles size (i.e. within a range between 0.1-35 μm), since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). It has been held that discovering that general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*,105 USPQ 233. Generally, differences in ranges will not support the patentability of subject matter encompassed by the prior art *unless* there is evidence indicating such ranges is critical. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). *In re Hoeschele*, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969).

As to claim 2, Fujimoto et al.'s most specific formula of the active material used is $SnSi_tP_uAL_vO_s$ represented by formula (V) (p4, line 50). Furthermore, the use of tin monoxide and silicon dioxide is exemplified in the synthesis examples 1-5 (p7-8),

As to claim 3, Fujimoto et al.'s outer anode active material layer and the inner anode active material layer are inherently alloyed with the current collector, because the tin used in the exemplified in the anode active material is able to be alloyed with the

exemplified anode current collector (copper, as is used in example 1 on p12, lines 22-26).

As to claim 4, in example 1 of Fujimoto et al., a negative electrode material is prepared via dispersion and applied to the current collector (p12, lines 22-26). This application is a liquid-phase deposition.

Response to Arguments

4. Applicant's arguments filed April 6, 2008 have been fully considered but they are not persuasive.

Applicant argues Fujimoto et al. does not teach alloying the current collector and active material.

Examiner respectfully disagrees with Applicant's position and submits that such an argument is irrelevant as Fujimoto et al. is not relied upon to teach of the alloying. It is submitted Fukui et al. is relied upon to render obvious such feature. Accordingly, Applicant's arguments are misguided and not applicable to the rejection as set forth. Accordingly, the arguments are not found to be convincing, and the rejection of record is maintained.

Applicant argues that Fukui et al. does not teach of the active material of the claimed particle diameter range.

Examiner respectfully disagrees with Applicant's position and submits that such an argument is irrelevant as Fukui et al. is not relied upon to teach the claimed particle size. It is noted that within the rejection two interpretations are taken. With respect to the first one (giving a broad interpretation as to what constitutes primary particles)

Fujimoto et al. would render such a claimed diameter range obvious, as it embodies an active material with an average particle size that falls within the claimed range (p 7, lines 1-7). Alternately (giving a narrower interpretation on what constitutes primary particles), Bito et al. is relied upon to render obvious such a range, as it embodies a size of primary particles for an anode active material within the claimed range. Furthermore, it is set forth within the rejection that the active material primary particle sizes are result effective variables, wherein it has been held that finding optimum/workable ranges of result effective materials would be obvious to one of ordinary skill in the art. See the rejection of claim 1 for full details. Accordingly, Applicant's arguments are misguided and not applicable to the rejection as set forth. Thus, the arguments are not found to be convincing, and the rejection of record is maintained.

Applicant argues that col. 6 lines 40-45 of Ikeda et al. does not teach of a current collector with a plurality of layers (and that the two current collectors are combined into one) and compares it to the portion cited in col. 4, line 65- col. 5, line 6.

Examiner respectfully disagrees. First of all, the portion cited in col. 6, lines 40-45 clearly state the presence of two layers, as two layers are joined. Therefore, the broad teaching is that two layers can be put back to back to form a composite collector. It is unsure how two layers even if joined (i.e. via adhesive, sintering, welding, etc) would not still comprise of the two original layers. Accordingly, the composite current collector has two joined layers, wherein the integral current collector still comprises the plurality of layers that has formed it and thus reads on the claimed feature, barring further specification as to the structure of the plurality of layers. Office personnel are to

give claims their broadest reasonable interpretation in light of the supporting disclosure. *In re Morris*, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997). Also, limitations appearing in the specification but not recited in the claim are not read into the claim. See *In re Zletz*, 893F.2d 319, 321-22,13 USPQ2d, 1320, 1322 (Fed. Cir. 1989). Additionally, it is noted that the portion Applicant cites as a comparison (col. 4, line 64 to col. 5, line 6) is a teaching with respect to the active material. Accordingly, it has no bearing as to the structure of the current collector. Finally, it is noted that Ikeda et al. also has another embodiment, as set forth within the rejection, wherein Ikeda et al. teaches of a composite current collector having the structure of interlayer-current collector-interlayer, wherein such a structure is also seen to render obvious using plural layers (col. 2, line 58 to col. 3, line 7), and thus renders obvious the claimed invention as well. See the rejection to claim 1 for full details. Accordingly, such arguments are not found to be persuasive, as it is submitted that Ikeda et al. does still render obvious a plural layered current collector. Thus, the rejection of record is maintained.

Applicant argues that Ikeda et la. does not teach the particle diameter range required by the claims.

Examiner respectfully disagrees with Applicant's position and submits that such an argument is irrelevant as Ikeda et al. is not relied upon to teach the claimed particle size. It is noted that within the rejection two interpretations are taken. With respect to the first one (giving a broad interpretation as to what constitutes primary particles) Fujimoto et al. would render such a claimed diameter range obvious, as it embodies an active material with an average particle size that falls within the claimed range (p 7,

lines 1-7). Alternately (giving a narrower interpretation on what constitutes primary particles), Bito et al. is relied upon to render obvious such a range, as it embodies a size of primary particles for an anode active material within the claimed range. Furthermore, it is set forth within the rejection that the active material primary particle sizes are result effective variables, wherein it has been held that finding optimum/workable ranges of result effective materials would be obvious to one of ordinary skill in the art. See the rejection of claim 1 for full details. Accordingly, Applicant's arguments are misguided and not applicable to the rejection as set forth. Thus, the arguments are not found to be convincing, and the rejection of record is maintained.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to EUGENIA WANG whose telephone number is (571)272-4942. The examiner can normally be reached on 7 - 4:30 Mon. - Thurs., EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/E. W./
Examiner, Art Unit 1795

/PATRICK RYAN/
Supervisory Patent Examiner, Art Unit 1795